

IN THE CLAIMS

What is claimed is:

1           1.       (Original) A circuit comprising:

2           a differential amplifier having a differential input terminal pair and a differential output  
3 terminal pair, wherein the differential amplifier provides a differential oscillating signal at the  
4 differential output terminal pair; and

5           an inductor-capacitor (LC) tank coupled between the differential input and output terminal  
6 pairs, wherein the LC tank comprises an inductive element coupled in parallel with a capacitive  
7 element, wherein the capacitive element comprises:

8           a first varactor pair coupled to receive a first differential control voltage, the first  
9 control voltage i) sets a capacitance of each varactor of the first varactor pair and ii) provides  
10 a first level of adjustment to an oscillation frequency of the oscillating signal, and

11           a second varactor pair coupled to receive a second differential control voltage, the  
12 second control voltage i) sets a capacitance of each varactor of the second varactor pair and  
13 ii) provides a second level of adjustment to the oscillation frequency of the oscillating signal,  
14 wherein the first and second levels of adjustment are different.

1           2. (Original) The invention as recited in claim 1, wherein the capacitive element is AC-coupled  
2 between the differential input and output terminal pairs.

1           3. (Original) The invention as recited in claim 1, wherein the differential amplifier comprises a  
2 set of cross-coupled transistors.

1           4. (Original) The invention as recited in claim 3, wherein the set of cross-coupled transistors is  
2 configured as a pair of back-to-back inverters.

1           5. (Original) The invention as recited in claim 1, wherein each of the first and second pairs of  
2 varactors are configured as back-to-back varactors.

1           6. (Original) The invention as recited in claim 1, wherein the circuit is a voltage-controlled  
2 oscillator (VCO).

1        7. (Original) The invention as recited in claim 6, wherein the VCO is employed in a phase-  
2 locked loop (PLL) circuit, the first differential control voltage represents a feedback error for process  
3 variations of the PLL circuit, and the second differential control voltage represents a feedback phase  
4 error of the PLL circuit.

1        8. (Original) The invention as recited in claim 1, further comprising at least one other pair of  
2 varactors, each of the at least one other pair of varactors coupled to receive a corresponding  
3 differential control voltage to i) set a capacitance of each varactor of the at least one other varactor  
4 pair and ii) provide a corresponding level of adjustment to the oscillation frequency of the oscillating  
5 signal.

1        9. (Original) The invention as recited in claim 1, further comprising a filter, coupled between a  
2 source voltage and the differential output terminal pair of the differential amplifier, the filter adapted  
3 to filter one or more harmonics of the oscillation frequency.

1        10. (Original) The invention as recited in claim 1, wherein the circuit is embodied in an  
2 integrated circuit.

1        11. (Newly Added) A circuit comprising:

2            an amplifier having an input terminal and an output terminal, wherein the amplifier is  
3 configured to i) amplify a signal at the input terminal and ii) provide an oscillating signal at the  
4 output terminal; and

5            an impedance element having an inductive element and a capacitive element, the impedance  
6 element coupled between the input terminal and the output terminal of the amplifier, wherein the  
7 capacitive element comprises:

8            a first variable capacitor coupled to receive a first control voltage, the first control  
9 voltage i) setting a capacitance of the first variable capacitor and ii) providing a first level of  
10 adjustment to an oscillation frequency of the oscillating signal, and

11           a second variable capacitor coupled to receive a second control voltage, the second  
12 control voltage i) setting a capacitance of the second capacitor and ii) providing a second  
13 level of adjustment to the oscillation frequency of the oscillating signal, wherein the first and  
14 second levels of adjustment are different.

1 12. (Newly Added) The invention as recited in claim 11, wherein the circuit is a voltage-  
2 controlled oscillator (VCO).

1 13. (Newly Added) The invention as recited in claim 12, wherein the VCO is employed in a  
2 phase-locked loop (PLL) circuit, the first differential control voltage represents a feedback error for  
3 process variations of the PLL circuit, and the second differential control voltage represents a  
4 feedback phase error of the PLL circuit.

1 14. (Newly Added) The invention as recited in claim 11, further comprising at least one other  
2 variable capacitor, each of the at least one other variable capacitors coupled to receive a  
3 corresponding control voltage to i) set a capacitance the at least one other variable capacitor and ii)  
4 provide a corresponding level of adjustment to the oscillation frequency of the oscillating signal.

1 15. (Newly Added) Apparatus for generating an oscillating signal, the apparatus comprising:  
2 an amplifier having an input terminal and an output terminal, wherein the amplifier provides  
3 a differential oscillating signal at the output terminal; and

4 an inductor-capacitor (LC) tank coupled between the input terminal and the output terminal  
5 of the amplifier, wherein the LC tank comprises an inductive element coupled in parallel with a  
6 capacitive element, and wherein the capacitive element comprises:

7 a first varactor pair coupled to receive a first control voltage, wherein the first control  
8 voltage i) sets a capacitance of each varactor of the first varactor pair and ii) provides a first  
9 level of adjustment to an oscillation frequency of the oscillating signal, and

10 a second varactor pair coupled to receive a second control voltage, wherein the  
11 second control voltage i) sets a capacitance of each varactor of the second varactor pair and  
12 ii) provides a second level of adjustment to the oscillation frequency of the oscillating signal,  
13 wherein the first and second levels of adjustment are different.